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Biochemical Studies of Cestode Parasite in Fresh Water Fish *Mastacembalus Armatus* from Paithan Region

KEYWORDS: Cestode, Mastacembalus armatus, Paithan, Senga.

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ABSTRACT *Parasitic biochemistry is a field growing in parallel with the new surge of interest in tropical diseases. Whereas previously parasitologists have been required to adopt biochemical methodology in order to stay abreast of development. Bio-molecules such as protein, glycogen and lipids are determined in parasites and also infected and non-infected intestine of host. Results, after comparison between cestode parasites and host intestine, the protein and glycogen concentration is lower in Senga Sp. as compare to host intestine (infected and non-infected intestine) and lipid concentration is higher than Senga Sp. as compare to host intestine (infected and non-infected intestine). But the protein, glycogen, lipid concentration is higher in non-infected intestine as compare to infected intestine.*

INTRODUCTION

Biochemistry is the study of structure, composition and chemical reactions of substances in living systems. Parasitology has developed into a multi-dimensional approach in helminth research. They serve as valuable models for the study of fundamental biological phenomena. The biochemistry and physiology of Cestode has been comprehensively reviewed by Smyth and McManus (1989) and specific aspects have been reviewed by Arai (1980), Arme and Pappas (1983 a,b), Barratt (1981), McManus (1987) and McManus and Bryant (1986).

The Proteins are absorbed by the parasites by diffusion and transfusion. Proteins have many different biological functions. They are everywhere in their distribution and there is really no satisfactory scheme of classifying them. The largest groups of proteins are the enzyme proteins provide rich environment for the nourishment of cestodes. The cestodes utilize different degrees of protein that producing energy. Literature reveals that the parasites able to adopt themselves to the parasitic mode of life, the protein usually constitutes between 20 to 40 % of the dry weight (John Barrett, 1981).

The glycogen content of various helminthes fluctuates considerably and there is variation in habitat, though no similarity in nutrition of worms. Glucose is an important source of energy for cestodes, inhabiting the alimentary tract of vertebrates (Mishra et al 1945). Cestodes possess stored carbohydrate metabolism, with enormous amount of stored carbohydrate (Daugherty 1956, Fairbairn, Werthein, Harpuret Schiller 1961, Markov, 1943 and Read et Rothman, 1957 b). Cestode parasites stores relatively large quantities of polysaccharides, which in most cases has been assumed to be glycogen (Read 1949 and Reid 1942).

Lipids are of great importance to the body of cestodes as the chief concentrated storage form of energy, besides their role in cellular structure and various other biochemical functions. The higher content of lipid is found in older proglottids (Brand and Van T., 1952).

The present investigation deals with the biochemical studies of Cestode parasites i.e. *Senga* Sp. in *Mastacembalus armatus.*

MATERIALS AND METHODS

Sample Collection

The worms were collected from the intestine of fresh water fish *Mastacembalus armatus* and then washed with distilled water. Collected worms were then dried on the blotting paper to remove excess water and transferred to watch glass and weight on sensitive balance. After 50-60^0 C for 24 hrs. the dry weight was also taken.

Biochemical estimation

The estimation of protein content in the Cestode parasites were carried out by Lowry's method (1951), the glycogen estimation were carried out by Kemp et al. (1954) method and lipid estimation by Folch et al. (1957) method.

RESULT AND DISCUSSION

In the present investigation, Cestode parasites i.e. *Senga* sp. was carried out for biochemical estimation of primary metabolites such as protein, glycogen and lipid (Graph).

It shows that the protein content of worm *Senga* sp. obtained 12.92 mg/g weight of tissue. Such as infected as well as non-infected intestine of fresh water fish *Mastacembalus armatus* obtained 20.49 mg/g weight of tissue and 21.32 mg/g weight of tissue respectively. Protein content is lower in cestode parasites as compare to host (Asawari Fartade, 2011).

The glycogen content of *Senga* sp. obtained 13.17 mg/100 ml of solution. Such as infected as well as non-infected intestine of fresh water fish *Mastacembalus armatus* obtained 25.21 mg/100 ml of solution and 27.88 mg/100 ml of solution respectively. Glycogen content is lower in *senga* sp. as compare to infected and non-infected intestine of host (Asawari Fartade, 2011).

While the lipid content of *Senga* sp. obtained 22.56 mg/gm. Such as infected as well as non-infected intestine of goat obtained 12.11 mg/gm and 13.89 mg/gm respectively. Lipid content is higher in Cestode parasites as compare to host intestine (Asawari Fartade, 2011).

From the present experimental study it has been observed that the percentage of lipid is high in parasites as compared to protein and glycogen. These parasites absorbing most of nourishing from host and fulfilling its need causing hindrance in the proper development of tissue (B. V. Jadhav et al. 2008)

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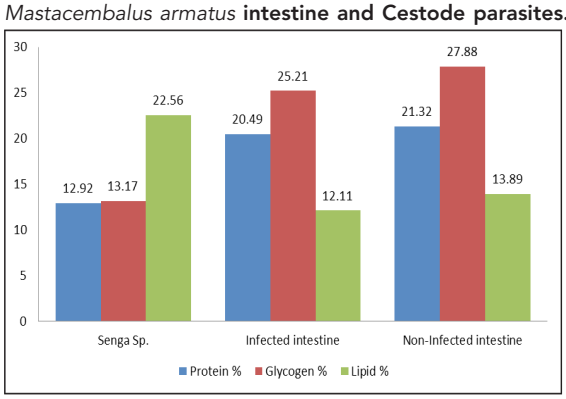
Table No. 1: Biochemical estimation of fresh water fish *Mastacembalus armatus* **intestine and parasites i.e.** *Senga.*

Name of Parameter	***Senga* Sp.**	Infected intestine	Non-Infected intestine
Protein (mg/g weight of tissue)	12.92	20.49	21.32
Glycogen (mg/100 ml of solution)	13.17	25.21	27.88
Lipid (mg/gm)	22.56	12.11	13.89

Graph No. 1: Biochemical estimation of fresh water fish *Mastacembalus armatus* **intestine and Cestode parasites.**



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